EPA Region 7 TMDL Review

TMDL ID:	NE-LP1-10000, LP1-20000, LP2-10000, LP2-10100, LP2-20000, LP2-20400, LO2-20500 and LP2-30000	**Water Body ID:**	NE-LP1-10000, LP1-20000, LP2-10000, LP2-10100, LP2-20000, LP2-20400, LO2-20500 and LP2-30000
Water Body Name:	Lower Platte River Basin (8 tmdls)		
Tributary:	Four Mile Creek, Cedar Creek, Elkhorn River, Salt Creek, Lost Creek, Shell Creek, Wahoo Creek, Rock Creek and Oak Creek		
Pollutant:	E. coli Bacteria		
State:	Nebraska	**HUC:**	10200201, 10200202 and 10200203
BASIN:	Missouri		
Submittal Date:	June 26, 2007		
Approved:	Yes		

Submittal Letter

State submittal letter indicates final TMDL(s) for specific pollutant(s)/water(s) were adopted by the state, and submitted to EPA for approval under section 303(d) of the Clean Water Act.

Letter submitting dated June 22, 2007 was received by EPA on June 26, 2007, formally submitting this TMDL for approval under Section 303(d). NDEQ revisions to Lower Platte River Basin TMDL were submitted by email August 13, 2007.

Water Quality Standards Attainment

The water body's loading capacity for the applicable pollutant is identified and the rationale for the method used to establish the cause-and-effect relationship between the numeric target and the identified pollutant sources is described. TMDL and associated allocations are set at levels adequate to result in attainment of applicable water quality standards.

The TMDL target is based on the numeric water quality criteria for *E. coli* bacteria of $\leq$126/100ml. The allowable pollutant load is based upon the available stream flow volume. That is, loading capacities (LC) are developed for each flow by multiplying the water quality standard (WQS) by the selected stream flow and a conversion factor (C) with the equation being defined by:

$$LC = WQS*Flow* C$$

The TMDL and allocations are set at a level adequate to result in attainment of applicable WQS.

Numeric Target(s)

Submittal describes applicable water quality standards, including beneficial uses, applicable numeric and/or narrative criteria. If the TMDL is based on a target other than a numeric water quality criterion, then a numeric expression, site specific if possible, was developed from a narrative criterion and a description of the process used to derive the target is included in the submittal.

The pollutant causing the impairment(s) of the WQS and designated beneficial uses is *E. coli* bacteria. Designated uses assigned to the above identified segments include: primary contact recreation; aquatic life (Warmwater class A and B); agriculture; industrial water supply class A; and aesthetics (NDEQ 2006a). Excessive *E. coli* has been determined to be impairing the primary contact recreation beneficial use. The applicable water quality criteria are a recreation season (May 1 – September 30) 30 day geometric mean of 126 cfu/100 mL for *E. coli.*

Numeric Target(s) and Pollutant(s) of concern

An explanation and analytical basis for expressing the TMDL through surrogate measures (e.g., parameters such as percent fines and turbidity for sediment impairments, or chlorophyll-a and phosphorus loadings for excess algae) is provided, if applicable. For each identified pollutant, the submittal describes analytical basis for conclusions, allocations and margin of safety that do not exceed the load capacity.

The water quality standard is 126 cfu/100 mL as a 30 day geometric mean during the recreational period. This is a direct measure. WLA in this TMDL are given as concentration, directly targeting the criterion. LA is expressed as percent reductions which will result in the target concentration in the segments identified and as daily loads.

Source Analysis

Important assumptions made in developing the TMDL, such as assumed distribution of land use in the watershed, population characteristics, wildlife resources, and other relevant information affecting the characterization of the pollutant of concern and its allocation to sources, are described. Point, non point and background sources of pollutants of concern are described, including magnitude and location of the sources. Submittal demonstrates all significant sources have been considered.

Sources of *E. coli* in the watersheds for these segments include point and nonpoint sources (including natural sources). Loads are quantified with flow duration curves. Point sources include specific permitted sources given in the TMDL by segment. There are a total of 41 NPDES permitted facilities in the basin identified in the table below.

Recreation Segment	Receiving Water	Facility	NPDES Permit Number	Facility Design Flow (cfs)	Facility Discharge Directly to Recreation Segment?	Approximate Distance to Recreation Segment (stream miles)	*E. coli*/ Fecal coliform Limits in NPDES permit?
LP1-10000	LP1-10000	Johnson's Development	NE0114251	0.01	Yes		Yes
	LP1-10100	SID #5 Cass Co., Buccaneer Bay	NE0112437	0.19	No	0.5	Yes
	LP1-10000	SID #101 Sarpy Co., Hanson Lake	NE0132632	0.15	Yes		Yes
	LP1-10000	SID #97 Sarpy Co., Hawaiian Village	NE0113158	0.15	Yes		Yes
	LP1-10900	Springfield WWTF	NE0041343	0.34	No	1.6	No
	UD to LP1-11000	Nebraska Crossing	NE0127817	0.05	No	8.1	No
	UD to LP1-11000	Flying J Travel Plaza	NE0123862	0.02	No	9.5	Yes
	LP1-10000	Louisville WWTF	NE0024228	0.31	Yes		Yes
	LP1-11500	Simmons Safari Park WWTF	NE0132501	0.00	No	1.5	Yes
	LP1-10000	Nebraska National Guard Camp	NE0114286	0.04	Yes		No
LP2-20000	LP1-20200	Yutan WWTF	NE0024376	0.19	No	3.7	No
	LP1-20000	SID #8 Saunders Co., WWTF	NE0132608	0.05	Yes		Yes
	UD to LP1-20000	Valley View Homeowners Assn.	NE0113450	0.03	No	0.8	Yes
	LP1-20000	SID #3, Dodge Co., Lake Ventura	NE0113441	0.02	Yes		Yes
	LP1-20000	North Bend WWTF	NE0040924	0.28	Yes		Yes
	LP1-21000	Schuyler WWTF	NE0042358	1.08	No	3.8	Yes
	LP1-21010	Cargill Meats Solution Corp.	NE0000795	4.25	No	8.3	Yes
	UD to LP1-21700	Bellwood WWTF	NE0046094	0.06	No	5.3	Yes

	UD to LP1-21010	Richland WWTF	NE0132195	0.02	No	12.7	No
LP2-10000	LP2-10000	Ashland WWTF	NE0026107	0.46	Yes		Yes
	LP2-10700	SID #2 Cass Greenwood Interchange	NE0112950	0.08	No	2.4	No
	LP2-10000	Greenwood WWTF	NE0027367	0.14	Yes		Yes
	UD to LP2-11100	Ceresco WWTF	NE0046124	0.18	No	14.7	No
	LP2-11110	Davey WWTF	NE0024295	0.03	No	18.7	No
	LP2-10111	Memphis WWTF	NE0029165	0.05	No	6.2	No
LP2-10100	LP2-10200	Wahoo WWTF	NE0021679	1.08	No	3.3	No
	UD to LP2-10140	Cedar Bluffs WWTF	NE0039888	0.09	No	26	No
	UD to LP2-10140	Colon WWTF	NE0033499	0.02	No	19.9	No
	UD to LP2-10121	Mead WWTF	NE0024309	0.08	No	11.7	No
	LP2-10200	Weston WWTF	NE0046337	0.04	No	13.1	No
	LP2-10111	Memphis WWTF	NE0029165	0.05	No	6.2	No
LP2-20000	UD to LP2-20000	Waverly WWTF	NE0024406	0.81	No	1.8	Yes
	LP2-20000	Lincoln NE WWTF	NE0112488	15.47	Yes		Yes
	UD to LP2-20000	NDOR Lincoln Solar WB RA	NE0113824	0.02	No	1.2	No
	UD to LP2-20200	Firethorn WWTF	NE0131547	0.00	No	11.3	No
	UD to LP2-20200	Sky Ranch Acres	NE0112780	0.01	No	6.9	No
	LP2-20000	Lincoln Theresa St. WWTF	NE0036820	44.87	Yes		Yes
	LP2-21300	Denton WWTF	NE0046141	0.04	No	8.7	No
	UD to LP2-21000	Shoemaker's Truck Station Inc.	NE0124401	0.02	No	4.4	Yes
LP2-20500	LP2-20520	Malcolm WWTF	NE0024261	0.05	No	5.0	No
LP2-30000	LP2-30100	LES Rokeby Peaking Unit	NE0123935	0.04	No	1	No
	LP2-30200	Hickman WWTF	NE0046183	0.26	No	3.6	No

Additional point sources include numerous animal feeding operations and possible illicit discharges. Nonpoint sources also includes failing septic tanks, onsite wastewater systems, run-off from livestock pastures, improper or over-application of biosolids, urban storm water not regulated by permit and natural sources from wildlife. The load duration curves are divided by hydrology to indicate flows with primarily nonpoint or point sources influence. Nonpoint and background sources are not separated. All significant sources have been considered.

Allocation

Submittal identifies appropriate wasteload allocations for point, and load allocations for nonpoint sources. If no point sources are present the wasteload allocation is zero. If no nonpoint sources are present, the load allocation is zero.

Both point and nonpoint sources (including natural sources) have been identified to be contributing to the pollutant loads being delivered to the Lower Platte River Basin segments.

The waste load allocations for point sources discharges are equivalent to the water quality criteria associated with the primary contact recreation beneficial use. Therefore, the WLA is a monthly geometric mean of 126/100 ml.

The load allocations assigned to these TMDLs will be based on the stream flow volume and will be defined as:

$$LC = Q*126/100 \text{ ml } *C$$

WLA Comment

WLA for facilities classified as non-discharging will be zero (0).

NPDES permitted facilities TMDLs are set at a monthly geometric mean of 126 cfu/100 ml. Dry weather discharges are set at a seasonal geometric mean of 126 cfu/100 ml.

The wasteload allocation will initially be applied to all facilities that discharge directly to a recreational segment.

The targeted WLAs for E. coli are given by cfu/daily loads by basin, LP1-10000 (2.3×10^7 cfu/day), LP1-20000 (2.9×10^7 cfu/day), LP2-10000 (1.8×10^7 cfu/day), LP2-10100 (0 cfu/day), LP2-20000 (1.9×10^{11} cfu/day), LP2-20400 (0 cfu/day), LP2-20500 (0 cfu/day) and LP2-30000 (0 cfu/day)

LA Comment

Calculation of daily loads requires flow at the percentiles of exceedance given in a load duration curve. These flows are given in the table below.

	Flow Value (cfs)							
Percentile	LP1-10000	LP1-20000	LP2-10000	LP2-10100	LP2-20000	LP2-20400	LP2-20500	LP2-30000
0	658	250	57	19	29	0.2	2.6	4
10	1,860	1,230	98	35	62	0.8	7	9
20	2,770	1,820	119	42	74	0.9	10	12
30	3,930	2,360	139	48	90	1	13	16
40	5,042	2,910	166	54	109	1.1	17	21
50	6,080	3,490	208	63	138	1.3	24	28
60	7,160	4,190	272	74	183	1.5	33	38
70	8,672	4,970	355	84	245	1.8	48	58
80	10,900	6,000	534	103	355	2.4	77	96
90	16,200	8,630	1,040	160	681	4.1	159	245
100	138,000	46,000	35,000	7,000	21,300	91	6,070	3,380

Daily loads calculated at median flow by basin are: LP1-10000(1.9×10^{11} cfu/day); LP1-20000 (1.1×10^{11} cfu/day); LP2-10000 (6.4×10^9 cfu/day); LP210100 (1.9×10^9 cfu/day); LP2-20000 (4.3×10^9 cfu/day); LP2-20400 (4.0×10^7 cfu/day); LP2-20500 (7.4×10^8 cfu/day); and LP2-30000 (8.6×10^8 cfu/day).

Margin of Safety

Submittal describes explicit and/or implicit margin of safety for each pollutant. If the MOS is implicit, the conservative assumptions in the analysis for the MOS are described. If the MOS is explicit, the loadings set aside for the MOS are identified and a rationale for selecting the value for the MOS is provided.

To account for uncertainty in the nonpoint source load reduction, the targeted reductions will be set at 90% of the water quality target (126/100 ml). Specifically the reductions shall be applied to meet a seasonal 30 day geometric mean of ≤113/100 ml. This is an explicit MOS.

Decay and/or die off *E. coli* were not accounted for in either the source assessment or in establishment of the load reduction. That is, the entire concentration/load from the source was assumed to be present within the waterbody and the reductions should focus on the load. This is an implicit MOS.

These TMDLs assumed the effluents discharge the *E. coli* density allowed by the WLA of 126/100ml. WWTF disinfection systems are often designed and operated to achieve 100% reduction in the indicator bacteria or 0/100ml. Thus, the actual NPDES permitted point source contribution is likely less than expected by the TMDL. This is an implicit MOS.

Seasonal Variation and Critical Conditions

Submittal describes the method for accounting for seasonal variation and critical conditions in the TMDL(s).

The water quality criteria are only applicable during the Title 117 defined recreation season that starts May 1 and ends September 30. Because of this, the water quality and stream volume data was limited to this time period.

Public Participation

Submittal describes public notice and public comment opportunity, and explains how the public comments were considered in the final TMDL(s).

The availability of the TMDLs in draft form was published in the Columbus Telegram, Fremont Tribune and the Lincoln Journal Star with the public comment period running from approximately May 14, 2007 to June 18, 2007. These TMDLs was also made available to the public on the NDEQ's Internet site and interested stakeholders were informed via email of the availability of the draft TMDL. No comments were received during the public participation period.

Monitoring Plan for TMDL(s) Under Phased Approach

The TMDL identifies the monitoring plan that describes the additional data to be collected to determine if the load reductions required by the TMDL lead to attainment of WQS, and a schedule for considering revisions to the TMDL(s) (where phased approach is used).

Future monitoring will be consistent with Nebraska's rotating basin monitoring scheme. That is, annually, two or three river basins in the same geographic location are the focus of the monitoring effort. The Lower Platte River Basin was monitored in 2004 and will again be targeted in 2009. An effort will be made in expanding the monitoring to isolate areas of concern and to focus resources to address identified problems.

Periodically, compliance monitoring will be conducted at NPDES permitted facilities to verify permit limitations are being adhered to. Facilities are selected either randomly or in response to inspection or reported information. As well, the NPDES permits require self-monitoring of the effluent by the permittee with the frequency of the monitoring being based on the discharge characteristics. The data is then reported to NDEQ quarterly, semiannually or annually and entered into the EPA's Permitting Compliance System. The compliance monitoring and self-monitoring information will be used in assessing the success of the TMDL.

Recently, analytical techniques have been introduced that may provide a greater level of confidence in the identification of pollutant sources. These techniques include microbial source tracking and specialized sampling the targets human wastewater. As the science progresses the application of these analytical techniques may become a valuable tool for source identification and pollutant reduction.

Reasonable assurance

Reasonable assurance only applies when reductions in nonpoint source loading is required to meet the prescribed waste load allocations.

Reasonable assurance is not required as the WLA for all point sources are set at a level that will attain WQS.

Mr. Michael J. Linder, Director
Nebraska Department of Environmental Quality
Suite 400, The Atrium
1200 N. Street
PO Box 98922
Lincoln, Nebraska 68509-8922

Dear Mr. Linder:

RE: Nebraska TMDL submittals

This letter responds to the submission from Nebraska Department of Environmental Quality (NDEQ) on June 26, 2007, of eight final Total Maximum Daily Load (TMDL) documents. This submittal fulfills the Clean Water Act statutory requirement to develop TMDLs for those waters listed on the Nebraska §303(d) list. Specifically, these eight documents, representing their water bodies and impairments, were addressed:

- Carter Lake – Algae and Turbidity.
- Antelope Creek – Ammonia and E. coli.
- Lake Ogallala – Dissolved Oxygen.
- Fremont #20 – Algal Toxins.
- Lower Platte River Basin – E. coli.
- Shell Creek – Atrazine.
- Middle Creek – Atrazine.
- Nemaha River Basin – E. coli and Atrazine.

The United States Environmental Protection Agency (EPA), Region 7, reviewed each of the eight TMDL submittals. EPA has completed its review of the TMDLs for which NDEQ has completed revisions, supporting documentation and information, and by this letter EPA approves the TMDL documents submitted.

Region 7 TMDL review forms are enclosed with this letter which summarizes the rationale for EPA's approval for each approved TMDL document. EPA believes the separate elements of the TMDLs described in the review forms adequately address the pollutants of concern, taking into consideration seasonal variation and a margin of safety.

WWPD/WQMB:Adkins:MCx7490:08-29-07:H:WQMB/2007Correspondence/Adkins/NE approval 8-2007.doc

WQMB	WQMB	CNSL	WQMB	WWPD/IO
Adkins	Perkins	Miller	DeLashmit	Spratlin
8/24/07	8/24/07	9/25/07	9/28/07	SEP 28 2007 /07

EPA has engaged in consultation under Section 7 of the Endangered Species Act with the United States Fish and Wildlife Service regarding these TMDLs. While EPA is approving these TMDLs at the present time, EPA may decide that changes to the TMDLs are warranted based upon the results of the consultation when it is completed.

EPA commends NDEQ on its efforts to submit these TMDLs. We appreciate the thoughtful teamwork and partnering effort that Nebraska has put forth in the development of these TMDLs. We will continue to cooperate and assist, as appropriate, in future efforts by Nebraska to develop TMDLs.

Sincerely,

William A. Spratlin
Director
Water, Wetlands and Pesticides Division

Enclosures

cc: Patrick O'Brien
NDEQ